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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WYROZEBSKI LEE, KATARZYNA I

ART UNIT

PAPER NUMBER

1714

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/086,173

Applicant(s)

KNUDSON ET AL.

Examiner

Katarzyna Wyrozebski Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) \_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4, 11, 13-17, 22-24 and 28-30 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 5-10, 12, 18-21 and 25-27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

*Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In the instant invention, claim 7 recites isobutylene containing polymer. The examiner was unable to find any statement in the specification, which would shed some light as to what type of polymer the applicant is actually utilizing. From the scope of different intended uses for the nanocomposite such as tires, paints and molding, the examiner is unable to deduce, whether the isobutylene-containing polymer is a rubber or another type of the polymer having pendant isobutylene group.

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

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2. Claims 11, 19-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 contains limitation of “up to about 80%” of polymer. From the language of the claim it is not clear if the applicants claim “up to 80%” or “about 80%” of polymer.

Claim 19 contains limitation of “up to about 90%” of clay. From the language of the claim it is not clear if the applicants claim “up to 90%” or “about 90%” of clay.

Claim 20 contains limitation of “up to about 30%” of clay. From the language of the claim it is not clear if the applicants claim “up to 30%” or “about 30%” of clay.

Claim 21 contains limitation of “up to about 10%” of clay. From the language of the claim it is not clear if the applicants claim “up to 10%” or “about 10%” of clay.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-4, 11, 13-15, 17, 22-24, 28-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Ross (US 6,380,295).

The prior art of Ross discloses example 1 (col. 10) where aqueous hectorite slurry is mixed with non-ionic organic materials. The non-ionic organic materials are listed in Table 1 (col. 10) and it includes co-polymers of N-vinyl pyrrolidone/acrylic acid, polyvinylmethylether/methacrylic acid, polyethylene oxide, polyamide, polyurethane, polystyrene, polyacrylamide, polyester, polyesteramide and the like. Next according to the example 1 of Ross, quaternary ammonium compound is added in an amount sufficient to react 100 % of the measured cation exchange capacity of the clay. Table 2 (col. 13) further discloses use of bentonite clay.

Quaternary ammonium compound utilized in the process of Ross according to Table 1 (col. 10-12) include dimethyldihydrogenated tallow ammonium chloride or methyl bis(2-hydroxyethyl)stearyl ammonium chloride.

In clay/polymer dispersion the ratio between polymer and clay is 5:100 to 80:100 and organic cation will be utilized in an amount of at least 15% based on the weight of clay.

The present claims require that the dispersion of polymer and clay be formed by mixing polymer with liquid medium and by mixing clay with liquid medium. Well, that is how dispersions are formed intrinsically therefore even though the prior art of Ross does not disclose specific step of mixing solid components with liquid carriers such step is inherent in view of the fact that two dispersions are mixed together.

The amount of clay in the aqueous composition as shown in Example 1 (col. 10, line 31) is 2.8 % whereas the amount of polymer in the dispersion is 30% (line 32).

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The specification of the prior art of Ross further discloses other clays that can be utilized such as montmorillonite, saponite, stevensite and beidelite each of which are members of smectite type clays.

Matrix polymers utilized in the nanocomposite of Ross polyesters, polyamides, polyethers, polycarbonates, polyurethanes and rubbers (col. 9, lines 32-48). Preferred amount of clay in nanocomposite is 1-30% by weight and more preferably 3.5-12 wt % (col. 9, lines 52-58), where intrinsically polymer will make up most of the difference, which would be 70-99 wt%.

In the light of the above disclosure, the prior art of Ross anticipates claims rejected above.

***Allowable Subject Matter***

5. Claims 5-10, 12, 18-21 and 25-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski Lee whose telephone number is (703) 306-5875. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
KIWL  
May 30, 2003